This listing of the claims replaces all prior versions in the application.

Listing of Claims:

1. (Original) A method of flowably dispensing or processing dry powders from a device having a dry powder flow path, comprising:

generating a first non-linear vibration input signal, the first non-linear input signal comprising a plurality of different selected frequencies that correspond to a first non-pharmaceutical dry powder formulation; and

applying the first non-linear vibration input signal to a portion of a dry powder flow path while the first dry powder formulation is flowing therethrough.

2. (Original) A method according to Claim 1, wherein the selected frequencies correspond to flow characteristic frequencies of the first dry powder, and wherein the generating step is carried out to cause the dry powder to flow in a substantially uniform fluidic manner without aggregation and/or agglomeration.

3. (Original) A method according to Claim 1, said method further comprising dispensing the first non-pharmaceutical dry powder through a dispensing port, wherein the dispensing step is carried out to serially dispense meted quantities of between about 10μg-10mg.

4. (Original) A method according to Claim 3, wherein each of the meted quantities are in substantially the same amount with a variation of less than about 10%.

5. (Original) A method according to Claim 1, further comprising providing a second non-pharmaceutical dry powder and mixing the first and second dry powders based on the generating and applying steps.

6. (Original) A method according to Claim 4, wherein the variation is less than about 5%.

7. (Original) A method according to Claim 1, wherein the non-linear input signal has a plurality of superpositioned modulating frequencies.

8. (Original) A method according to Claim 1, wherein the dry powder comprises a toner powder.

9. (Original) A method according to Claim 1, wherein the dry powder comprises a metal powder.

10. (Original) A method according to Claim 1, wherein the dry powder comprises a coating powder.

11. (Original) A method according to Claim 1, wherein the dry powder comprises a precious metal.

12. (Original) A method according to Claim 1, wherein the input signal is derived from an evaluation of time between avalanches as detected in a mass flow analysis of the dry powder formulation.

13. (Original) A method according to Claim 12, wherein the derivation of the input signal converts time to frequency space to render frequency distribution data of the mass flow analysis of the dry powder formulation.

14. (Original) A method according to Claim 1, further comprising generating a second non-linear vibration input signal, the second non-linear input signal comprising a plurality of different selected signal frequencies that correspond to predetermined flow characteristics of a second non-pharmaceutical dry powder formulation; and

adjusting the non-linear input signal to apply a second non-linear vibration input

signal to the flow path while the second non-pharmaceutical dry powder formulation is flowing therethrough, the second input signal being different from the first input signal.

15. (Original) A method according to Claim 1, wherein the applying step is carried out at a localized portion of a hopper in the flow path.

16. (Original) A method according to Claim 1, wherein the applying step is carried out by applying the non-linear vibration energy along a major portion of the length of a hopper located in the flow path, the length of the hopper extending in the direction of flow.

17. (Original) A method according to Claim 13, wherein the non-linear input signal comprises a plurality of superimposed frequencies that are selected to represent a desired number of the most observed frequencies in the frequency distribution data.

18. (Original) A method according to Claim 1, wherein the applying step is carried out to concurrently apply vibrational energy to the flow path at multiple superimposed selected frequencies.

19. (Original) A method according to Claim 1, wherein the non-linear input signal comprises frequencies in the range of between about 10Hz to 1000kHz.

20. (Original) A method according to Claim 1, wherein the non-linear input signal comprises carrier frequencies in the range of between about 15kHz to 50kHz.

21. (Original) A method according to Claim 1, wherein the vibration energy input signal is based on electrical stimulation of a portion of the flow path.

22. (Original) A method according to Claim 1, wherein the vibration energy input signal is generated by mechanical stimulation of the dry powder.

23. (Original) A method according to Claim 1, wherein the vibration energy input signal is generated by electro-mechanical stimulation of the flow path and/or the first dry powder.

24. (Original) A method according to Claim 1, wherein the vibration energy input signal comprises imparting a high frequency motion onto a selected portion of a hopper in the flow path, with the outer bounds of the motion induced by the energy input of the hopper is small.

25. (Original) A dry powder processing and/or dispensing system, comprising:

a device configured to hold a non-pharmaceutical dry powder therein, the device having a dry powder flow path and a flow channel with an inner surface and outer surface;

a quantity of a target non-pharmaceutical dry powder disposed in the device;

at least one vibration energy generation source operably associated with the device, wherein, in operation, the at least one vibration energy generation source is configured to output a desired non-linear vibratory energy to the dry powder as the dry powder flows through the flow path in the device; and

a control module operably associated with the device and the vibration energy generation source, the control module comprising:

computer program code configured to selectively adjust the output of the vibration energy generation source based on a desired predetermined dry powder specific vibration energy output customized to the non-pharmaceutical dry powder being processed; and

computer program code that directs the vibration energy source to output the selected vibration energy to the device that corresponds to the target non-pharmaceutical dry powder in the system.

26. (Original) A system according to Claim 25, further comprising computer program code with a plurality of predetermined different dry powder-specific flow enhancing vibration energy outputs, each associated with a different non-pharmaceutical dry powder and/or non-pharmaceutical dry powder formulation.

27. (Original) A system according to Claim 26, wherein the system is configured to mix and/or dispense a plurality of different non-pharmaceutical dry powders serially or concurrently, and wherein the control module comprises computer program code that accepts user input to identify the dry powder(s) being processed, and computer program code that automatically selectively adjusts the output of the vibration energy generation source based on the identified dry powder(s).

28. (Original) A system according to Claim 25, wherein the computer program code for the predetermined dry powder-specific vibration energy output is based on a mass flow analysis of the dry powder being processed and/or dispensed.

29. (Original) A system according to Claim 27, wherein the computer program code for the predetermined dry powder-specific vibration energy outputs for the dry powders are derived from data obtained from a mass flow analysis thereof.

30. (Original) A system according to Claim 29, wherein the dry powder is a low-density dry powder.

31. (Original) A system according to Claim 25, wherein the dry powder is a toner.

32. (Original) A system according to Claim 25, wherein the dry powder comprises a metal powder.

33. (Original) A system according to Claim 25, wherein the dry powder comprises a

coating powder.

34. (Original) A system according to Claim 25, wherein, in operation, the system is configured to mix a plurality of different dry powders of different densities to provide a substantially homogeneous mixture.

35. (Original) A system according to Claim 25, wherein the system is configured to expel or dispense serial measured quantities of non-pharmaceutical dry powder in substantially the same amount with a variation of less than about 10%.

36. (Original) A system according to Claim 25, wherein the selected non-linear energy is a non-linear signal comprising a plurality of predetermined superpositioned modulating frequencies.

37. (Original) A system according to Claim 25, wherein the computer program code of predetermined vibration generation source output signals is derived from selected parameters of a mass flow analysis of the dry powders, and wherein the derivation converts time space data of the mass flow analysis of the dry powders to frequency space data.

38. (Original) A system according to Claim 25, wherein, in operation, the vibration energy generation source is configured to apply the energy signal to cause the dry powder to flow in a substantially uniform fluidic manner without agglomeration and/or aggregation.

39. (Original) A system according to Claim 25, wherein the vibration generation source is configured to output high frequency vibration energy.

40. (Original) A system according to Claim 25, wherein the device comprises a piezoelectric material that is operably associated with the target dry powder in the flow path channel, and wherein the vibration energy generation source comprises a power source that

can supply a selected electrical input signal to the piezoelectric material, wherein, in operation, the piezoelectric material outputs vibration energy to the target dry powder.

41. (Original) A system according to Claim 25, wherein the vibration energy generation source outputs a non-linear input signal comprising vibration excitation frequencies in the range of between about 10 Hz to 1000 kHz.

42. (Original) A system according to Claim 25, wherein the vibration energy generation source outputs a non-linear input signal comprising at least one carrier frequency in the range of between about 15kHz to 50kHz and a plurality of modulation frequencies in the range of between about 10-500Hz.

43. (Original) A system according to Claim 25, further comprising an elongated insert configured to reside in the flow path in the device such that the insert downwardly extends a distance out of a dispensing port and eccentrically rotates relative to the axis of the flow path of the device during operation to transmit directional acceleration to particles of the dry powder.

44. (Original) A system according to Claim 43, wherein, in operation, the insert is oscillated with a selected motion that has an associated irregular and/or non-constant period.

45. (Original) A system according to Claim 25, wherein the vibration generation energy output comprises a high frequency motion applied onto a selected portion of the device with the outer bounds of the motion of the device being small.

46. (Original) A system according to Claim 25, further comprising computer program code configured to control the dispensing of dry powders from the device, the computer program product configured to control the activation of a valve that opens and closes the flow

path of the system to control the amount of dry powder dispensed in unit amounts of less than about 15mg.

47. (Original) A computer program product for operating a flowing non-pharmaceutical dry powder processing and/or dispensing system having an associated dry powder flow path with a dispensing port and a vibration energy source associated therewith to facilitate fluidic flow, the computer program product comprising:

a computer readable storage medium having computer readable program code embodied in said medium, said computer-readable program code comprising:

computer readable program code that defines at least one powder-specific non-linear vibration energy signal corresponding to individually predetermined flow property data of the plurality of at least one target dry powder; and

computer readable program code that directs the dispensing system to operate using the powder-specific vibration energy signal associated with the target dry powder.

48. (Original) A computer program product according to Claim 47,wherein the computer readable program code that defines at least one powder-specific non-linear vibration energy signal corresponding to powder-specific predetermined flow property data of the at least one target dry powder comprises computer program code the defines a plurality of different non-linear input signals, a respective one for each of a plurality of different dry powders, each of the vibration energy signals based on individually determined flow property data, said product further comprising:

computer readable program code that accepts user input to identify the dry powder being dispensed, and computer program code that automatically selectively adjusts the output of the vibration energy signal based on the identified dry powder being dispensed.

49. (Original) A computer program product according to Claim 47, wherein the vibration energy output signal for the target dry powder is based on data obtained from a mass flow analysis of the target dry powder.

50. (Original) A computer program product according to Claim 47, wherein the vibration energy output signal for the target dry powder is based on data obtained experimentally from a flow analysis of the target dry powder.

51. (Original) A system of flowably processing and/or dispensing non-pharmaceutical dry powders from a device having a dry powder flow path, comprising:

means for generating a first non-linear vibration input signal, the first non-linear input signal comprising a plurality of different selected frequencies that correspond to flow frequencies in flow characteristics of a first non-pharmaceutical dry powder formulation; and

means for applying the first non-linear vibration input signal to a dispensing device having at least one dispensing port while the first dry powder formulation is flowing therethrough; and

means for dispensing a first quantity of the first dry powder.

52. (Original) An apparatus for processing, dispensing and/or expelling non-pharmaceutical dry powders, comprising:

an elongate flow channel having a width, length, and depth, the flow channel having axially spaced apart inlet and outlet ports, wherein the elongate flow channel is configured to extend in an angular orientation of between about 10-75 degrees relative to the axial direction of flow;

a flexible piezoelectric layer configured to overlie the flow channel so that, in operation, the piezoelectric layer is able to flex upwardly away from the lowermost portion of the underlying flow channel;

a quantity of non-pharmaceutical dry powder positioned in the flow channel; and

a signal generator operatively associated with the piezoelectric layer, wherein, in operation, the signal generator is configured to output a signal for flexing the piezoelectric layer which vibrates the dry powder in the elongate flow channel.

53. (Original) An apparatus according to Claim 52, wherein the flexible piezoelectric

layer is a piezoelectric polymer, copolymer or derivative thereof.

Claims 54-60 (Canceled).

61. (Original) A method according to Claim 60, wherein the vibrating step comprises applying the excitation signal voltage to the underside of the piezoelectric material.

62. (Original) A method according to Claim 58, wherein the non-linear excitation signal is formed using a plurality of superpositioned modulating frequencies.

63. (Original) A method according to Claim 62, wherein the number of superpositioned modulating frequencies is at least three.

64. (Original) A method according to Claim 63, wherein the number of superpositioned modulating frequencies is four.

65. (Original) A method according to Claim 64, wherein the four modulating frequencies are in the range of between about 10-15Hz.